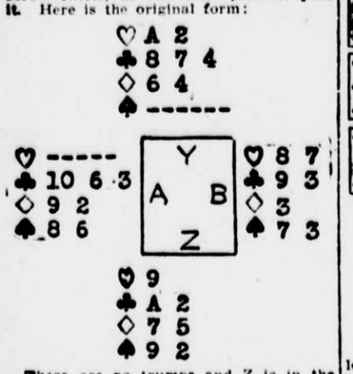
PROBLEMS FOR "SUN" READERS TO SOLVE

Prof. Wertenbaker's Corkscrew Twists Puzzling to the Bridge Players.

CHIPS FOR THE CAPTAIN

Hard End Games for the Checker Experts—Magic Square of Prime Numbers.

Those who succeded in solving Prof. Wertenbaker's latest bridge problem seem pretty well agreed that it was fully up to his usual standard of excellence and it kept them busy following its various corkscrew twists, as one correspondent puts it. Here is the original form:



There are no trumps and Z is in the lead. Y and Z want five tricks against any defence.

The solution is for Z to lead the seven of diamonds. (The five will not do.) The best defence for A is to duck the trick. Z then leads the ace and deuce of clubs and A has the choice of two lines of defence, winning the trick himself or letting it go to B.

If A wins with the ten and leads the diamond, B has to discard. If A follows with the six of clubs, Y makes the eight and Z makes the nine of hearts and nine of spades. If A leads the spade instead of the club, Z makes the nine and Y makes the ace of hearts and eight of clubs.

If A lets the second round of clubs go to B's nine, B has two leads. If he tries the heart, A must discard and if A lets go a diamond, that establishes a trick for Y and Z. If he lets go a spade, Y lets Z hold the heart trick and Z leads the spade nine and then the deuce, putting B in and so securing a heart trick for Y. If A discards the ten of clubs, Y wins the heart with the ace and makes his eight of clubs, forcing A to discard a spade. Y puts A in with a diamond and Z makes the nine of spades.

If A lets B win the second club and B leads a spade Z wins the trick, Y discarding a diamond. Now Z leads the nine of hearts and A has to solve the problem, because if he discards a diamond the heart nine holds and the five of diamonds is good. If A lets go a club Y overtakes the heart and makes the club eight. If A discards a spade the heart nine holds the trick and Z puts B in with a spade, so that the heart ace makes.

The only variation in the first trick is for A to win it with the nine of diamonds, upon which Y must play the four. Now if A leads either of the black suits Y's diamond six is a reentry card, so that A is forced to lead the diamond at once to take it out and prevent the heart nine and heart ace making separately. B discards a spade.

Y leads the top club. If B covers Z wins with the ace and leads the deuce. A makes the ten, but Y and Z make the three other tricks. If B ducks the club lead from Y, then Z will play low and A wins with the ten, Y and Z getting the rest of the tricks.

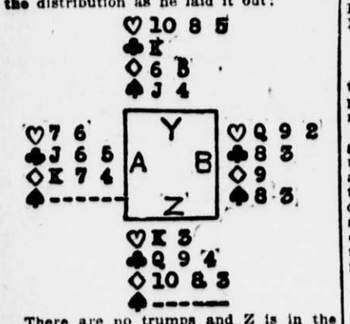
The false opening is the diamond five, which allows A to put on the nine and lead the deuce, forcing Z into the lead. Even after the correct opening with the diamond seven, if Z leads a low club instead of the ace first B wins with the nine and leads a heart, upon which A can afford to discard a club, keeping his hand protected.

The following are the only ones that gave the correct analysis of the four principal lines of defence, A playing high or low and B leading heart or spade:

James Hunter, Frank H. Young, Jay Reed, Walker McMartin, O. H. Boston, E. M. Frost, A. I. Strasburger, D. Perry, Henry Andresen, Burton D. Blair, William C. Eaton, H. K. Thaw, B. Arnold, James Steen, B. G. Braine, D. A. W., J. W. Miller, H. E. W., Charles H. Le Mon, W. P. W. and Charles M. Root.

Several of these express their thankfulness that the professor came across on a fast steamer and had no time to make it any worse than it is. James Steen says he will bet he was not sick a minute.

In problem No. 196, by Harry Asher, dummy won the bet as the cards were laid out, because he can show the declarer that there are two different ways in which he can get six tricks. Here is the distribution as he laid it out:



There are no trumps and Z is in the lead. Y and Z want six tricks. One solution is for Z to lead a small club, Y returning the spake jack, upon which Z and A both discard hearts. Y then leads a diamond, and whether A wins this trick or not, all he can make is two diamond tricks.

Suppose A wins the diamond with the king and leads a heart, Z makes a trick in each of the red suits and puts A back with a diamond. If A wins the diamond and leads the four of diamonds, Z lets Y hold the trick with the six, and Y comes along with a heart, so that Z makes all his winning cards.

The other solution is to begin with the ten of diamonds. If A puts on the king and returns the diamond, Z must overtake his partner's six with the eight and lead a club, so that Y can lead the heart ten through B, letting Y make the club queen and put B in with a heart. If B will not put the queen of hearts on the ten, Y makes his spade jack and then puts Z in with the heart.

If A ducks the first diamond trick, Z leads a small club and Y comes through with the ten of hearts, the king wins the queen and Z leads the queen of clubs and a small heart, so that Y shall make the spade and the heart.

The only ones to get both solutions were D. Perry and Jay Reed.

Those that got the diamond opening were: W. P. W., James Williams, Charles H. Le Mon, Emma C. Davis, J. V. Collins, C. R. Lynn, James Hunter, J. C. Snellman, C. S. Fletcher, J. W. Miller, H. J. Heller, E. C. Gaffney, K. W. Zimmerman, C. F. Johnson, Burton D. Blair, A. I. Strasburger, A. J. Schmutz, Walker McMartin, Frank H. Young and Paul Lippert.

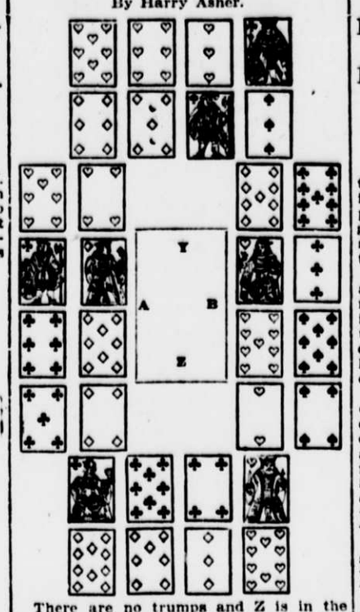
Those who got the club opening were: James Steen, D. A. W., J. H. Fraser, H. C. Root, M. E. Cameron, B. G. Braine, E. M. Frost, H. C. Kennedy, Charles M. Root, H. K. Thaw, M. A. Hunt, P. R. Kerr, W. G. Langdon, Henry Andresen, O. H. Boston and J. B.

When the doctor was shown the distribution of the cards on which Y won his bet, he insisted that they were not laid out correctly as regards the smaller and apparently unimportant cards, and that he would still back the declarer in his contention that there were only five tricks in the hand.

Here is the position as the doctor gave it from his notebook:

BRIDGE PROBLEM NO. 198.

By Harry Asher.



There are no trumps and Z is in the lead. Can Y and Z get more than five tricks against the best defence? If not what is the line of defence that stops them?

CHECKER ENDINGS.

The position shown in problem No. 196 thinned out the ranks of the checker experts in a way that should make J. Ferguson feel quite proud of himself. Several of them say they are not at all astonished that the checker sharps in Hickman failed to find the solution.

The distribution was: Black men on 1, 7, 12, 13, 14, 23, king on 24. White men on 5, 8, 22, 25, 29, 30, king on 4. White to play and win. Here are the moves that solve:

White.	Black.
22—18	14—17
8—3	7—11
3—8	11—16
25—21	17—22
29—25	22—29
30—25	29—15
8—11	15—8
4—18	

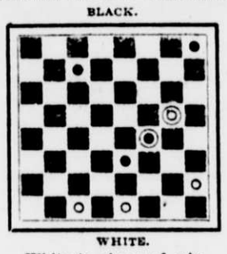
Correct solutions from:

J. H. Auerbach, James Steen, Clarence L. Lynn, D. A. W., Charles M. Root, Robert H. Hixon, John Rappelt, C. L. Lynn, O. H. Boston, James O'Donnell, John Ryan, W. L. Barteau and J. H. Noremac.

Here is a problem sent to THE SUN by a correspondent in Canada who says he does not know the author. Those who succeed in solving it will probably agree that the composer should be only too glad to discover himself.

PROBLEM NO. 198. CHECKERS.

BLACK.



WHITE.

White to play and win.

THAT MAGIC SQUARE.

Although a number of solutions to this puzzle were sent in giving various interesting combinations of prime numbers arranged in the form of magic squares under the restriction that the number 1 should aways be in a corner, none of them approached the correct solution in the matter of low totals.

Here are two ways in which the square can be arranged so as to agree with the conditions and still have as low a total as 108 in each line and diagonal:

1	19	71	17
5	53	3	47
43	29	23	13
59	7	11	31

1	71	19	17
43	23	29	13
5	3	53	47
59	11	7	31

Those who came nearest to this solution without quite reaching it were:

Charles D. Shuldham and O. H. Boston, 114; E. C. Werdann, 138; Achilles H. Kohn, 144; F. M. Kenny, 168, and Nemo, 196.

THE CAPTAIN'S CHIPS.

Here is a comparatively simple problem, the solution of which depends on the application of a very useful but little known rule in the properties of numbers.

A certain sea captain sat down in a game of poker at which real money was used instead of chips. Handing the waiter a twenty dollar bill, he told him to bring the change in two denominations of silver coins, but to bring him exactly the same number of each denomination. How did the waiter ascertain immediately what two denominations to bring without counting?

A Babylonian Love Letter.

From the Christian Herald.

The Rev. Dr. F. C. Eisen, professor of Old Testament interpretation in Chicago, has just translated a love letter written on a baked brick in Babylon four thousand years ago, which has been found in recent excavations. It contains a unique cure for the toothache and the avowals of the writer's warmest affection for his lady love and his intense desire that she should come to him in his new home.

The letter is as follows: "To Bibeya from Gimil-Marduk: May Shamash and Marduk grant thee, for my sake, to live forever. I write this to inquire after thy health. Let me know how it goes with thee. I am now settled in Babylon, but I am in great anxiety because I have not seen thee. Send news when thou wilt come that I may rejoice at it. Come in the month of Arakhsama (November-December). Mayest thou, for my sake, live forever." The toothache cure is: "So must thou say this: 'O worm, may Ea smite thee with the might of his fist.' Thou shouldst then do the following: Mix beer, the plant sa-kil-bar and oil together. Repeat thereon the incantation thrice and put it on the tooth."

Wildcat Attacks Young Preacher.

Carlisle correspondence Philadelphia Press.

Attacked by a wildcat E. Lamont Geissinger, a young preacher and student at Dickinson College, was driven down a steep side of North Mountain, and as a result of his experience was nearly prostrated when he reached Doubling Gap.

Geissinger saw watching him through the bushes a pantherlike animal about five feet long. He started to run, but the beast leaped after him, made repeated attacks upon him, and although Geissinger dealt it several blows on the head with a club he could not beat the animal off.

The young preacher made as fast time as he could for more than a mile down the mountainside, with the wildcat following. It was not until he was inside the hotel that the animal abandoned its pursuit and sneaked back into the timber.

SECOND HAND'S BIDS AT ROYAL AUCTION

Many Losses Due to the Weak Spot in the Average Player's Game.

FAULTS IN DECLARATIONS

Deals That Show Two Common Sources of Error at the Bridge Table.

It has frequently been remarked that the surest gauge of a bridge player's ability is the size of the rubbers he loses, and players of the better class are gradually getting down to the belief that the greatest source of loss in auction is overbidding the hands, not underplaying them.

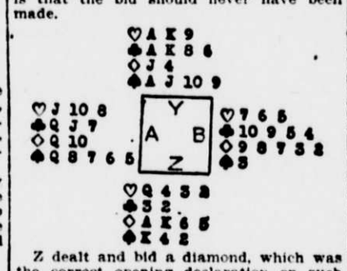
The weak spot in the game of every average player seems to be his management of the second hand position, and it is a curious fact that those who bid cautiously and according to convention as dealer, as dealer's partner or as fourth hand will often make absurd bids as second hand.

The reason for this seems to be twofold, overanxiety to show something and a desire to get into the bidding while it is cheap for fear it will not come round again. Once cure a player of these two faults and his game immediately advances 50 per cent. in value as a partner, because it is the weakness of a partner sitting second hand that a good player always dreads.

Correspondents have at various times sent hands to THE SUN which are intended to illustrate some point in the tactics of the game, but the point is almost invariably built upon the foundation of bad bidding by the second hand, which is quite overlooked in the discussion of what followed. "Cavendish" used to remark in the old whist days that the most brilliant plays on record at the whist table were due to the opportunities offered by the adversaries' mistakes.

Sometimes the hands sent to THE SUN are to demonstrate the importance of a certain lead, the value of a correct echo, or the necessity of unblocking, but in almost every case the declaration which permitted the large gains due to the play suggested was a declaration that should never have been made.

Here, for instance, is a hand sent by D. Perry of Washington which was recently played in a club in that city. In this case a bid of only one trick was doubled to great advantage, showing a large gain for the player who disregarded the rule that it is bad policy to double one trick bids; but the real point of the hand is that the bid should never have been made.



Z dealt and bid a diamond, which was the correct opening declaration on such cards, the hand not being quite strong enough for a no trumper. A overcalled with one royal, and although it was only a one trick bid, Y doubled.

The opinion of the best players is that it does not pay to double a one trick bid, because it gives the adversaries too easy a path to escape, warns them where the strength in a named suit lies, and also reduces the odds in favor of the player who thinks he can defeat the declaration. On an undoubled diamond it is 50 to 7 against the declarer; doubled, it is only 100 to 64.

In this case Y has almost a certainty that A cannot escape, because anything else he or his partner can name Y would be equally willing to double. The only question that would present itself to most persons in Y's position is why he did not go no trumps and take the game instead of the penalties. Y probably thought there was more in it the other way, and the outcome shows he was right.

But the real point in the hand is why did A bid a royal? He has not a trick in anything except a possible trump or two, and the player to his right announces two sure tricks in diamonds. Give A a trick and divide the remainder equally between Y and B and the chances are that Y's five with Z's two will make the odd, while B's five with A's one will lose it.

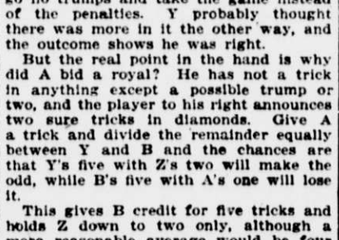
This gives B credit for five tricks and holds Z down to two only, although a more reasonable average would be four apiece for Y, B and Z. If B has five tricks in his hand, why not let him show what he wants to do with them? He may prefer to hold the game safe, or he may have a bid. By making a misleading declaration A puts B at a disadvantage, no matter what he has.

In the actual play on this hand, Y and Z made a grand slam against A, but this was due to bad play on A's part at the end of the hand. Y led both his kings, showing his reentries, and then led the jack of his partner's suit. Z won with the king and led the ace, and then, instead of forcing his partner, held his only remaining club, so as to get in a ruff himself.

After getting in the trump on the third club, Z led the heart to the ace marked in Y's hand and Y led a third round of hearts, which Z won, reducing A's hand to nothing but trumps, so that when Z led a diamond A had to trump it and Y overtrumped. Then, when Y led the club Z shut out A with the king of trumps and led a trump through, and at this point it was that A made the mistake of putting on the queen.

It is not Y's double of a one trick bid, but A's bad bidding as second hand that cost 776 points, and would have cost 656 even with the correct play.

Here is a hand in which the point was supposed to be the wisdom of Z's original declaration, the whole table being apparently blind to the absurdity of A's bid at second hand, which is the real point.



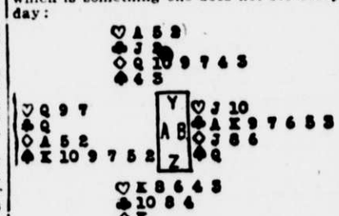
Z dealt, with the total score some 350 points in his favor, and instead of declaring no trumps at once he thought as he had a sure trick in three suits he would play the safe game and start with the cheapest, so that if it was doubled he could shift to a heart or a spade, or follow any bid made by his partner. He declared a diamond.

A bid two clubs, and Y, who was also cautious at the score, doubled, to show two stoppers in the suit and see whether his partner wanted to go any further with the diamonds.

At this stage of the proceedings B had an idea. By redoubling he might frighten Z back to the diamond suit and then, with the assistance of his partner's clubs, they would do some business. But Z, still cautious, passed the redouble, as he saw that if Y had two stoppers in clubs B must have everything else to redouble, and as Z lay over B's good cards he could not improve his position.

On the play A and B made four trump tricks, B making one and A three, so that the contract was set for 800 points, all of which was due to A's original declaration of two clubs, which led B into the trap that proved so expensive, but the only thing the players thought worthy of discussion was the fact that if Z had bid no trumps at the start he would have gone game on the hand, as every finesse lay right for him and he would have had nine tricks home before losing the lead. If Y goes no trumps and B leads a diamond instead of a club, as Y would declare the clubs doubly stopped, the result would be the same.

In contrast to the foregoing here is a hand in which every bid is sound and good for the contract that it undertakes, which is something one does not see every day:



Z dealt and bid a spade, not having a sure trick in any other suit and not being strong enough for two spades nor long enough for a royal.

A bid a royal, which is a good bid on his six trumps to two honors with a sure trick outside and a possible trick in hearts, to say nothing of the short suit that he can ruff. Y bid two diamonds, having pretty much the same sort of a hand as A. Although Z starts with a spade bid, he may have a trick or two here and there which will be useful with six trumps opposite them.

The interesting bid is B's, upon whose cards many players would make the mistake of bidding three clubs, in order to show A that they could not support his royal. Apart from the difficulty of going game in clubs, B sees that if A is strong enough to make a free bid of a royal and pull the dealer out of a spade call there is just as good a chance to make two by cards at no trumps as three by cards in clubs, so B bids two no trumps.

If the hand is played as a royal on A's declaration, Y to lead, it is good for the odd trick at least and may make two by cards. The play would develop an interesting point, because if Y opened the hand with his long suit and A won the king with the ace and led the club queen the result would depend on whether he overtook the queen with the king, so as to lead the ace and get a diamond discard, after which B can lead the queen of trumps. This would make two by cards for A.

If Z leads hearts after winning the trump lead with the ace he is back into the lead again, after trumping a diamond, making his king of hearts and jack of trumps. If he tries the club A will shut out Y with the nine of trumps and lead a heart, with the same result. The whole play would turn upon overtaking the queen of clubs, the reason for which is that dummy has no reentry, and if the queen is allowed to hold both ace and king of clubs would be lost.

If the hand were played on a diamond declaration by Y we should have another interesting point, which is the uselessness of leading trumps when you have no suit to defend. B would probably show his club suit and then lead the singleton spade, so as to establish the cross ruff. Nine players out of ten would probably lead the king of trumps from Z's hand, but there is nothing to lead trumps for, as the cross ruff cannot be stopped unless two or three rounds of trumps can be assured.

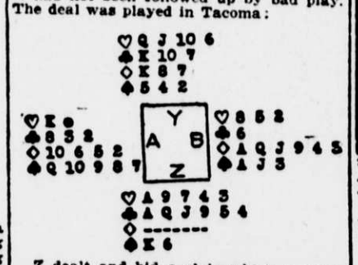
Z's best play would be to return the club, of which he holds second and third best, and whether A trumped it or let his partner's ace win would make no difference, because if B wins he will have to lead another club and A would have to put on the ace to shut out Y and continue the cross ruff, Y discarding a spade. Y would then ruff the spade with the queen and lead a small trump to Z's king, so that all A and B would make would be four trump tricks and the club, or two clubs and three trumps.

If Z leads the king of trumps when he gets in the hand does not go so well, because a heart trick will be lost at the end. As the hand was actually played on B's no trump declaration he went game easily.

Z led the king of his partner's suit and A led the club queen, which held the trick. He then led a small spade, forcing Z back into the lead. Unable to continue the diamonds, Z tried a heart, and the third round went to A's queen. A small diamond through Y compelled him to put on the queen and lead a spade as the only chance, Z put on the jack as the last chance to make it, B's hand being set up if A had a diamond to lead.

The result was that every spade in A's hand took a trick, the jack of diamonds winning the last trick of all. The remarkable thing about this is that the player who bid two no trumps on the strength of his big club suit never took a trick in it.

Fickle fortune is sometimes kind to these rash bidders, provided they can hold their advantage in the play. Here is a remarkable instance of bad bidding which would have turned out all right if it had not been followed up by bad play. The deal was played in Tacoma:



Z dealt and bid a club, which A overcalled with a royal. Y passed, not having enough to support a club bid that held out no promise of going game, and B, with his strong support, did not see any reason to shift to the cheaper diamond suit, so it was played at a royal, Y to lead. In the notes that accompanied the hand nothing was said about the absurdity of A's bid, the whole question being on the play.

Y led the club king, and finding B out of the suit shifted to his top heart. Z put on the ace and returned a small one, forcing A to trump. A led the eight of trumps and finessed it. Another heart forced A again, and it was at this stage that he made his mistake.

Instead of trying a diamond finesse, even with ten cards between the two hands, while he still had two trumps in each hand to stop the other suits he apparently took it for granted that the diamonds would drop and led another trump, winning it with the ace and returning the jack, which he overtook with the queen.

Then he led the ten of diamonds and Y dropped the eight, which had no effect on A, who put the ace right up, and that was the last trick he made, as Y got in on the next diamond and made his jack of hearts before giving his partner a club.

Had A played the hand correctly and tried the diamond suit out by taking a finesse in it before exhausting the trumps he goes game on the hand, no matter how the cards lie. Apparently the worst thing happens, as Z makes his little trump. But no matter what Z leads next B can trump with the ace and lead the jack, which A can overtake with the queen and lead the diamonds brought Y, making the whole suit, three by cards and the game, instead of losing two tricks on his contract.

WILD PIGEONS IN ARKANSAS.

Reported Seen by Hunting Party Along White River.

From the Kansas City Journal.

Have the wild pigeons which flew across the Mississippi Valley by the millions a quarter of a century ago and then suddenly disappeared returned? Michael G. Burns of Minneapolis, merchant and sportsman, declares that they have.

Men who heard Mr. Burns's statement at the Hotel White last night were inclined to discredit it, but the Minneapolis nimrod declares he has seen within the last two weeks wild pigeons in great numbers along the White River in Arkansas.

"I was a member of a floating party that started at Beaver, Ark., three weeks ago and floated to the mouth of the White River. One night, the second one out, I believe, our attention was attracted to a dead tree on the bank of the stream. Its branches seemed fairly alive with birds.

"None of us could guess what they were but the old guide, who was sitting in the stern guiding the boat. He dropped his paddle in surprise. 'Gosh, fellers, them's the first wild pigeons I've seen in twenty-five years!' he yelled and reached for the fowling piece. He brought down ten at a single shot."

HOW RATTLER PROTECTS YOUNG.

Washington Hunter's Story of an Encounter on a Game Trail.

From the Seattle Post-Intelligencer.

"During my ten years stay in Montana I had some experience with the rattlesnake," said an old hunter of Seattle, discussing this poisonous reptile and some of its characteristics. He continued:

"In Montana many have been killed by the rattlesnake. The most dangerous period is what is known as the dog days of July and August. In these months the reptiles are blind and always coiled for action. Very few people ever recover if bitten during either of these months, as the rattlers are more poisonous at this period than at any other time. The rattler is very savage in its blind condition and will strike at all sounds that appear near him.

"Although we are king of all animals, we hate to meet Mr. Snake. The people of Washington should be thankful to have such a prosperous State, splendid climate and to be entirely clear of the poisonous pests that people in many countries dread. I have been informed by good authority that plans are under way to start a big rattlesnake farm near Seattle, the object of the enterprise being to furnish the market with snake oil, which brings a high price the world over.

"In the first week of September, 1895, I had a queer experience with a rattlesnake family. This is a true story. I was on a hunting expedition in the South Crow Creek country in Montana.

"The morning was cold and chilly. I was in a hurry to cross the Quartzite Divide, which is the home of the dreaded reptiles. In picking my way over the rough surface I generally followed old game trails, especially when they led any way near my direction. I just reached the first big butte close to the summit when a large rattler jumped from a flat boulder and challenged me to fight. She almost struck me before I succeeded in getting away from her reach. She was more than five feet long and game to the tail. I think it was the most vicious snake I ever met during my travels in various mountain countries.

"In looking around to see what I could find in the nature of a weapon to kill this venomous enemy I nearly stepped on a large bunch of baby snakes. The little poisoners were huddled up close together. They were about five inches long, brownish in color, fourteen in all, and certainly were true counterparts of their mother, who was only a few yards away.

"You can imagine my surprise in looking down on this reptilian family. I was about to get a step closer when the old snake made a peculiar noise. I had no idea what it meant, but I was soon informed by the wise ones; they knew the call and made a dash for mother. She received them with open mouth, swallowing her little darlings as fast as nature allowed her to give them transportation. It was comical to see those little reptiles hurrying over the rough ground to obey mother's call when she gave them the signal of danger.

"After storing her babies she looked twice her former size, and, expecting trouble, coiled herself for battle. At this moment a thought struck me that I could kill the reptile with my rifle, although I had never heard of any one shooting a snake. Drawing a fine bead on the body of many lives I penetrated her centre with four shells from my 40-82 Winchester rifle."

FISH THAT FELL UPWARD.

Brilliant Colors at a Depth of 3,000 Feet.

From the London Evening Standard.

According to Sir John Murray, one of the greatest authorities on oceanography, the bottom of the sea is a desert of pitch black darkness, penetrating cold and eternal silence. Worms, sea puddings and coral polyps sluggishly crawl or sway in the almost currentless depths, and only two species of fish, both of them small, with much head and little body, have been found deeper than a mile and a quarter down.

The range of fishes in the sea is as though it were divided into layers, one above the other, and no fish can live above or below his layer. Thus many of the deeper fish—three-quarters of a mile below the surface—have been found floating at the top; they had swallowed a fish as large or larger than themselves and its buoyancy had lifted them out of the strata to which they were accustomed.

The physiology of a bottom fish is almost impossible to know, because they are built to resist a tremendous pressure of water, and when this pressure is released—as when they are brought to the surface in a net—sometimes the fish has burst; the organs are crushed beyond reconstruction.

Similarly if a fish of a higher strata attacks a bottom fish in the neutral zone where both can live, and—as sometimes happens—his teeth become entangled so that he cannot let go and he is dragged into deeper water, he strangles instantly, for his breathing arrangements are of no use to him under the pressure of water in the lower strata of the sea. As a rule, however, the fish of the various depths rarely feed on those above or below them.

There have been brought to light an astonishing number of forms of fish, and especially of prawns of a brilliant red color, living in the ocean at a depth of 3,000 feet. But astonishing as it may seem, these brilliantly colored fish and prawns instead of being conspicuous in the water at that depth are almost invisible, when almost any other color could be easily seen.

ORIGIN OF "FIRE WATER."

Indian Method of Discovering If Traders' Whiskey Was Diluted.

From Bonfort's Spirit and Wine Circular.

When the Hudson's Bay Trading Company began its trading among the Indians it was found that by selling the Indians liquor they could more easily be induced to trade their peltries.

The first whiskey or intoxicant of inferior quality was distilled in England and brought to America in large barrels, but in transporting it overland it was found more convenient to divide it into small kegs.

The traders soon became aware of the fact that by diluting the whiskey with water more furs could be obtained. This was practised for some time, but the Indians learned that good whiskey poured on a fire would cause it to flame up, whereas had the whiskey been diluted the fire would be quenched. It was by this simple experiment that the term "fire water" became a common word among Indians.

A chief who had experienced the bad effects of whiskey among his people said it was most certainly distilled from the hearts of wildcats and the tongues of women from the effects it produced.